What is claimed is:

1. An apparatus comprising:

- a plating container to hold a plating solution, the plating container having at least three anodes disposed within the plating container including an inner anode, a middle anode disposed outside of the inner anode, and an outer anode disposed outside the middle anode to apply a plurality of electric currents to the plating solution; and

- at least three current adjustment elements correspondingly coupled to the at least three anodes to adjust the electric currents applied by the anodes.

2. The apparatus according to claim 1, wherein the inner anode has a substantially planar inner surface, the middle anode has a substantially planar middle surface and an outer anode has a substantially planar outer surface; and the inner, middle and outer anode surfaces have substantially annular configurations and are disposed in concentric relationship with respect to each other.

3. The apparatus according to claim 2, wherein the plating container has an anode chamber to receive the plating solution and the anodes are positioned at a lower portion of the anode chamber; and the apparatus further comprises:

- a wafer holder positioned at an upper portion of the anode chamber;

- a substantially annular diffuser support collar mounted to the container between the wafer holder and the anodes and extending inwardly into the anode chamber; and

- a porous diffuser affixed to the diffuser support collar and disposed in traversing relationship to the anode chamber.

4. The apparatus according to claim 3, further comprising:

- a power supply having a negative terminal and a positive terminal with one of the terminals being disposed to be electrically connected to a wafer when the wafer is in the wafer holder, with each of the current adjustment elements being electrically coupled to the other one of the terminals.

5. The apparatus according to claim 4, wherein the anodes are in fluid contact with the plating solution and the wafer is removably disposed in the wafer holder in fluid contact with the plating solution; an electric field extends between the wafer and the anodes; and the diffuser support collar is configured with a first inner periphery to restrict the diameter of the electric field to reach the wafer.

6. The apparatus according to claim 2, wherein the plating container has a substantially circular base and an interior wall which combine to form an anode chamber to receive the plating solution and the anodes are positioned on the base; the apparatus further comprises:

- a wafer holder positioned adjacent to an upper portion of the plating container;
- a substantially annular diffuser support collar mounted on the interior wall between the wafer holder and the anodes and extending inwardly from the interior wall to terminate at a first inner periphery; and
- a porous diffuser affixed to the diffuser support collar and disposed in traversing relationship to the anode chamber.

7. The apparatus according to claim 6, wherein the anode chamber has a center axis; the first inner periphery of the diffuser support collar has a first radius about the center axis and the interior wall has a second radius about the center axis; and the second radius is greater than the first radius by a first predetermined amount.

8. The apparatus according to claim 7, wherein the wafer holder has an annular inner wall having a third radius about the center axis and an outward protruding shoulder having a fourth radius about the center axis; and the third radius is greater than the fourth radius by a second predetermined amount.

9. The apparatus according to claim 8, wherein the first predetermined amount and the second predetermined amount are at least partially inversely related.

10. The apparatus according to claim 9, wherein the first predetermined distance is selected so that the second predetermined amount is substantially zero.

11. The apparatus according to claim 8, wherein a bottom surface of the wafer holder and a top surface of the plating container are spaced-apart to create a plate gap of a third predetermined distance and the apparatus further comprises:

- a pump to circulate the plating solution into the anode chamber and out of the plate gap.

12. The apparatus according to claim 11, further comprising:

- a first and a second anode separators concentrically located with respect to the center axis, each anode separator being made of a non-conductive material and having an annular configuration; the first anode separator being interposed between the inner anode and the middle anode and the second anode separator being interposed between the middle anode and the outer anode.

13. The apparatus according to claim 12, wherein the first anode separator has a fifth radius about the center axis in the range of 9 to 11 centimeters; the first predetermined distance is in a range of 1 to 2 millimeters; the second predetermined distance is substantially zero and the third predetermined distance is in a range of 5 to 11 millimeters.

14. The apparatus according to claim 13, wherein the wafer, base, interior wall, anodes, and wafer holder are disposed in concentric relationship to the center axis; and the inner, middle and outer surfaces are disposed in substantially parallel, spaced-apart relationships with the wafer holder and the wafer.

15. The apparatus according to claim 14, wherein the inner surface, the middle surface, and the outer surface are substantially coplanar.

16. The apparatus according to claim 13, the apparatus further comprising:

- a power supply having a negative terminal electrically connected to a wafer and a positive terminal electrically connected to the current adjustment elements; and wherein each of the current adjustment elements is operable to set a predetermined value of electrical current for the anode to which it is attached.

17. The apparatus according to claim 1, further comprising;

- a wafer holder positioned adjacent to a top of the plating container; and
- a power supply having a negative terminal and a positive terminal with one of the terminals being disposed to be electrically connected to a wafer when the wafer is in the wafer holder, with each of the current adjustment elements being electrically coupled to the other one of the terminals.

18. The apparatus according to claim 1, wherein the apparatus is an apparatus to electroplate a film onto a wafer.

19. An apparatus comprising:

- a plating container, having a center axis and an interior wall, to hold a plating solution,
- at least two anodes centered on the center axis within the plating container, including an inner anode and an outer anode disposed outside of the inner anode, to apply a plurality of electric currents to the plating solution;
- a wafer holder mounted adjacent to a top of the plating container; and
- a substantially annular diffuser support collar mounted on the interior wall between the wafer holder and the anodes and disposed to extend inwardly toward the center axis.

20. The apparatus according to claim 19, wherein the annular diffuser support collar extends inwardly to terminate at a first inner periphery; the first inner periphery of the diffuser support collar has a first radius about the center axis and the interior wall has a second radius about the center axis; and the second radius is greater than the first radius by a first predetermined amount.

21. The apparatus according to claim 20, wherein the wafer holder has an annular inner wall having a third radius about the center axis and an outward protruding shoulder having a fourth radius about the center axis; and the third radius is greater than the fourth radius by a second predetermined amount.

22. The apparatus according to claim 21, wherein the first predetermined amount and the second predetermined amount are at least partially inversely related.

23. The apparatus according to claim 22, wherein the first predetermined distance is selected so that the second predetermined amount is substantially zero.

24. The apparatus according to claim 23, wherein a bottom surface of the wafer holder and a top surface of the plating container are spaced-apart to create a plate gap of a third predetermined distance.

25. The apparatus according to claim 24, further comprising:

- a anode separator concentrically located with respect to the center axis, with the anode separator being made of a non-conductive material and being interposed between the inner anode and the outer anode.

26. The apparatus according to claim 25, wherein the anode separator has a fifth radius about the center axis of approximately 6.5 centimeters; the first predetermined distance is approximately 1.3 millimeters; the second predetermined distance is approximately 7 millimeters and the third predetermined distance is in a range of 5 to 11 millimeters.

27. A system, comprising:

-an electroplating cell to electroplate a film onto a semiconductor wafer, including a plating container to hold a plating solution, with at least three anodes disposed within the plating container including an inner anode, a middle anode disposed outside of the inner anode, and an outer anode disposed outside the middle anode, the anodes being

operable to apply a plurality of electric currents to the plating solution; and at least three current adjustment elements coupled to the at least three anodes to adjust the electric currents applied by the at least three anodes; and

- a controller coupled to the electroplating cell to control the electroplating cell.

28. The system according to claim 27, wherein the inner, middle and outer anodes include surfaces with substantially annular configurations; and the middle and outer surfaces are each disposed in a concentric relationship with the inner surface.

29. The system according to claim 28, wherein the plating container has a substantially circular base and an interior wall which combine to form an anode chamber to receive the plating solution and the anodes are positioned on the base; the electroplating cell further includes a wafer holder positioned at an upper portion of the anode chamber; a substantially annular diffuser support collar mounted on the interior wall between the wafer holder and the anodes and extending inwardly from the interior wall to terminate at a first inner periphery; and a porous diffuser affixed to the diffuser support collar and disposed in traversing relationship to the anode chamber.

30. The system according to claim 29, wherein the anode chamber has a center axis; the first inner periphery of the diffuser support collar has a first radius about the center axis and the interior wall has a second radius about the center axis; and the second radius is greater than the first radius by a first predetermined amount.

31. The system according to claim 30, wherein the wafer holder has an annular inner wall having a third radius about the center axis and an outward protruding shoulder has a fourth radius about the center axis, the fourth radius is greater than the third radius by a second predetermined amount; and the first predetermined amount and the second predetermined amount are at least partially inversely related with the first predetermined amount being selected to make the second predetermined amount substantially zero.

32. The system according to claim 31, wherein a bottom surface of the wafer holder and a top surface of the plating container are spaced-apart to create a plate gap of a third predetermined distance and the electroplating cell further includes a pump to circulate the plating solution into the anode chamber and out of the plate gap.

33. The system according to claim 32, further comprising a first and a second anode separators concentrically located with respect to the center axis, each anode separator being made of a non-conductive material and having an annular configuration; the first anode separator being interposed between the inner anode and the middle anode and the second anode separator being interposed between the middle anode and the outer anode.

34. The system according to claim 33, wherein the first anode separator has a fifth radius about the center axis in the range of 9 to 11 centimeters; the first predetermined distance is in a range of 1 to 2 millimeters; the second predetermined distance is substantially zero and the third predetermined distance is in a range of 5 to 11 millimeters..

35. A method, comprising:

- providing an anode chamber with at least two concentric anodes including an inner anode and an outer anode;
- selecting at least one current ratio from a computer generated model, the one current ratio being a ratio of an inner electrical current to an outer electrical current;
- applying the inner electrical current to the inner anode and the outer electrical current to the outer anode; and
- adjusting the inner and outer electrical currents to incorporate the one current ratio.

36. The method according to claim 35, wherein the computer generated model has a plurality of current ratios from which the at least one current ratio is selected.

37. The method according to claim 36, further comprising:

- generating the computer generated model with a simulation computer program.

38. The method according to claim 37, wherein generating the computer generated model with the simulation computer program includes using a first iterative loop to determine a potential field in the anode chamber.

39. The method according to claim 38, wherein generating the computer generated model with the simulation computer program further includes using the first iterative loop to determine whether a current distribution over a cathode in the anode chamber matches a total current applied to the at least two anodes.

40. The method according to claim 39, wherein generating the computer generated model with the simulation computer program further includes using a second iterative loop to determine if a plating time has been reached.

41. The method according to claim 40, wherein generating the computer generated model with the simulation computer program further includes repeatedly running the simulation computer program once for each of the plurality of current ratios.

42. The method according to claim 35, further comprising:

- generating a flow of plating solution;
- restricting a diameter of an electric field in the plating solution created by the inner and outer electrical currents at a positioned between the anodes and a wafer holder.

43. The method according to claim 35, wherein the at least two concentric anodes include at least three concentric anodes including an inner, a middle and an outer anode.